

Safety  
Variant: [No Variations]

1/23/2019  
Version P1

RELEASED 23-JAN-2019

Page	Index	Page	Index	Page	Index	Page	Index
1	COVER PAGE	11	REVISION HISTORY	21	.....	31	.....
2	BLOCK DIAGRAM	12	.....	22	.....	32	.....
3	IMU	13	.....	23	.....	33	.....
4	MCU	14	.....	24	.....	34	.....
5	POWER SUPPLY	15	.....	25	.....	35	.....
6	RS232 INTERFACE	16	.....	26	.....	36	.....
7	RS485 INTERFACE	17	.....	27	.....	37	.....
8	CAN INTERFACE	18	.....	28	.....	38	.....
9	SD CARD	19	.....	29	.....	39	.....
10	MICROFIT	20	.....	30	.....	40	.....

DESIGN CONSIDERATIONS

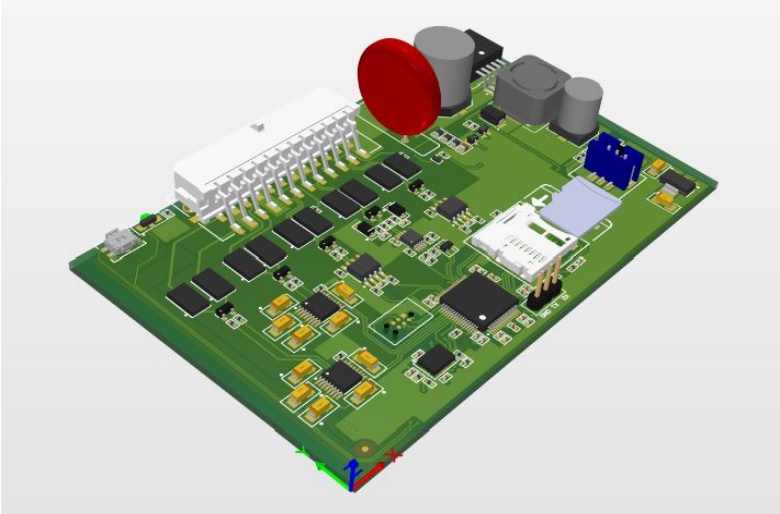
DESIGN NOTE:  
Example text for informational  
design notes.

DESIGN NOTE:  
Example text for cautionary  
design notes.

DESIGN NOTE:  
Example text for debug notes.

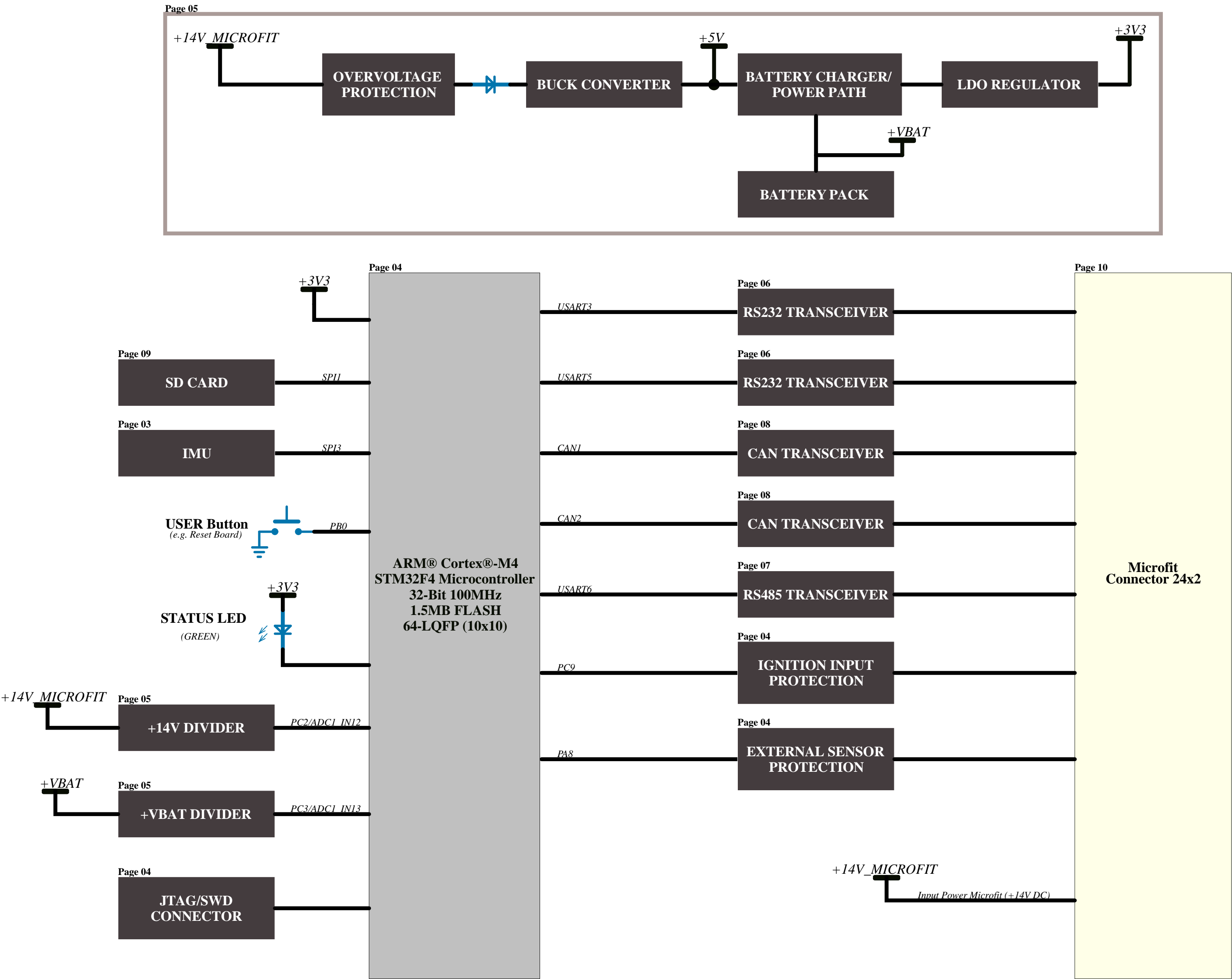
DESIGN NOTE:  
Example text for critical  
design notes.

LAYOUT NOTE:  
Example text for critical  
layout guidelines.



# Safety

## (Block Diagram)

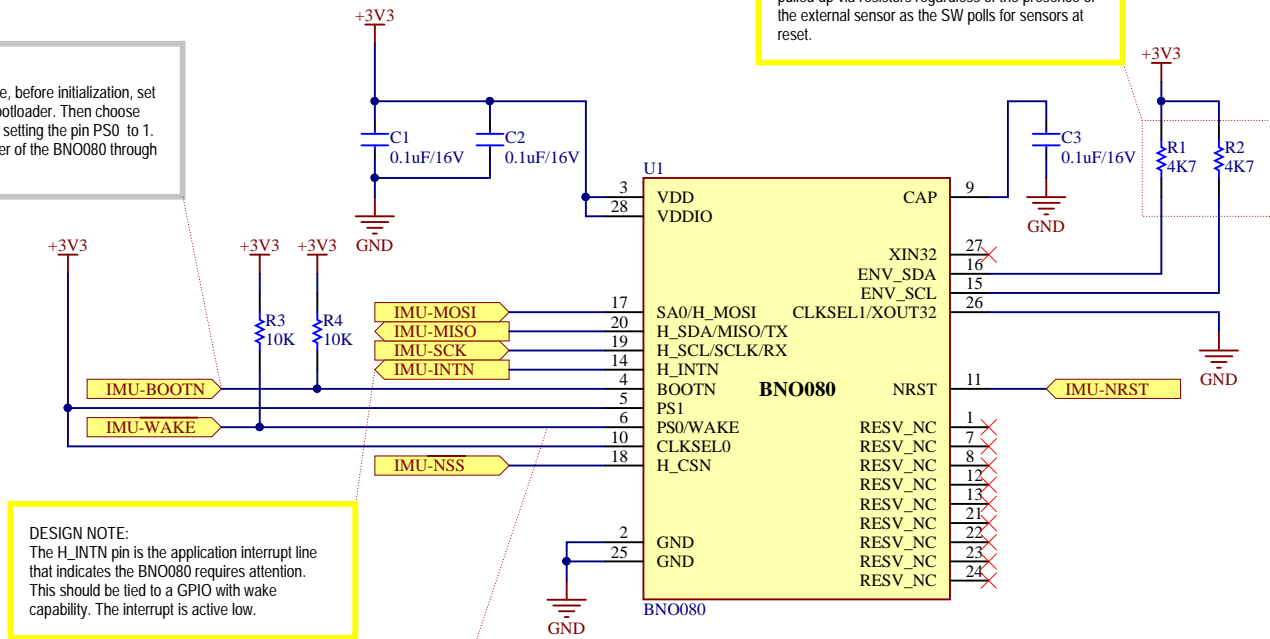


# IMU



**DESIGN NOTE:**  
In order to update the BNO080 firmware, before initialization, set BOOTN Pin to 0(zero) to access the bootloader. Then choose the SPI interface for communication by setting the pin PS0 to 1. This allows you to access the bootloader of the BNO080 through SPI interface.

**DESIGN NOTE:**  
The BNO080 supports environmental sensors (e.g. pressure sensors, ambient light sensors) on a secondary I2C interface. This interface should be pulled up via resistors regardless of the presence of the external sensor as the SW polls for sensors at reset.



**DESIGN NOTE:**  
The H\_INTN pin is the application interrupt line that indicates the BNO080 requires attention. This should be tied to a GPIO with wake capability. The interrupt is active low.

**DESIGN NOTE:**  
After reset the PS0/WAKE signal is used as a 'wake' signal taking the BNO080 out of sleep if the MCU wants to initiate communication with the BNO080

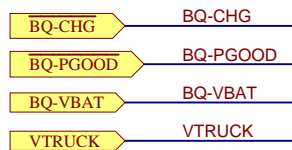
**DESIGN NOTE:**  
Pin 5 (PS1) and Pin 6 (PS0/WAKE) are the host interface protocol selection pins. Both pins must be high from before reset until after the first assertion of H\_INTN to select the SPI interface.

	Trucks Control <a href="https://truckscontrol.com.br">https://truckscontrol.com.br</a>	
	Title: Safety	Variants: [No Variations]
Page Contents: [03] - IMU.SchDoc		Checked by: Alex Batista
Size:		Version: P1
Date: 1/23/2019		Sheet: 3 of 12

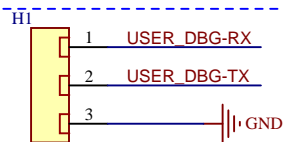
# MICROCONTROLLER



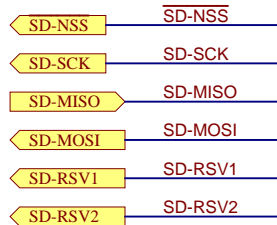
## PINOUT BATTERY



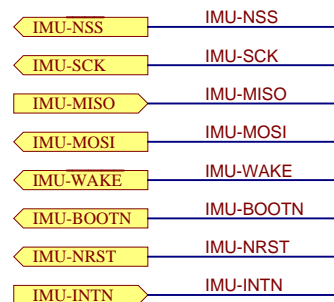
## PINOUT DEBUG USER



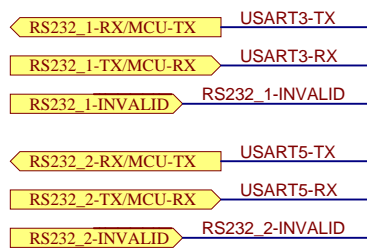
## PINOUT SD CARD



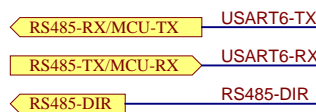
## PINOUT IMU



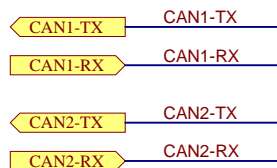
## PINOUT RS232



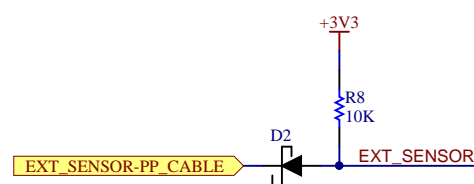
## PINOUT RS485



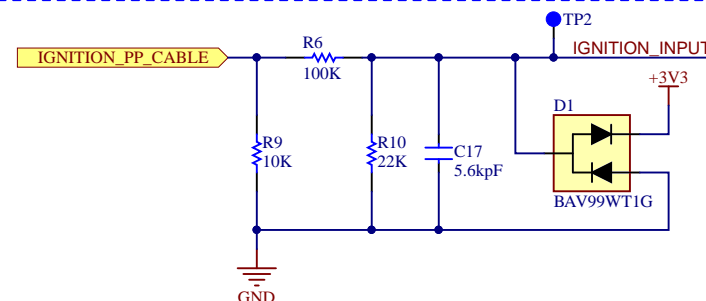
## PINOUT CAN



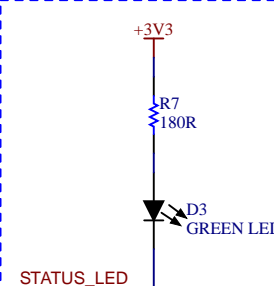
## PINOUT EXTERNAL SENSOR



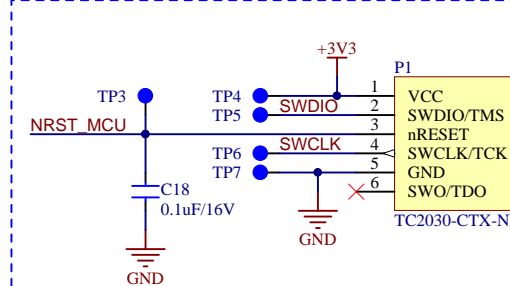
## PINOUT IGNITION INPUT PROTECTION



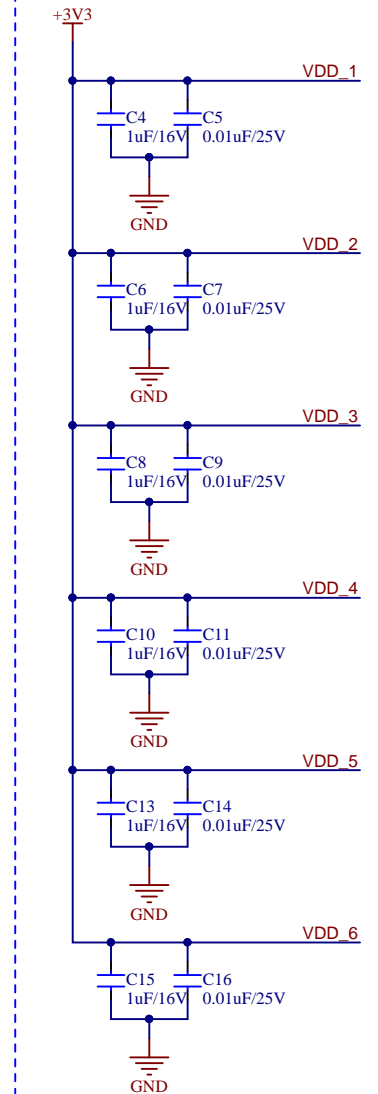
## PINOUT STATUS LED



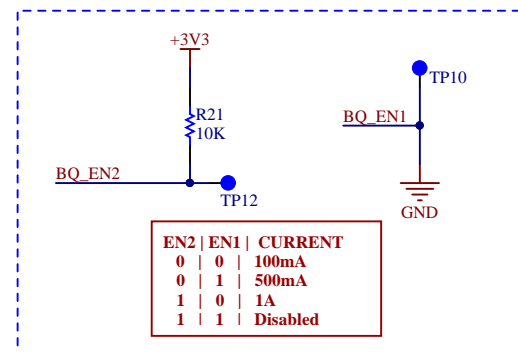
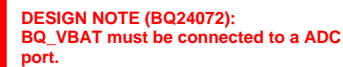
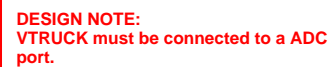
## PINOUT JTAG/SWD CONNECTOR




## DECOUPLING CAPACITORS

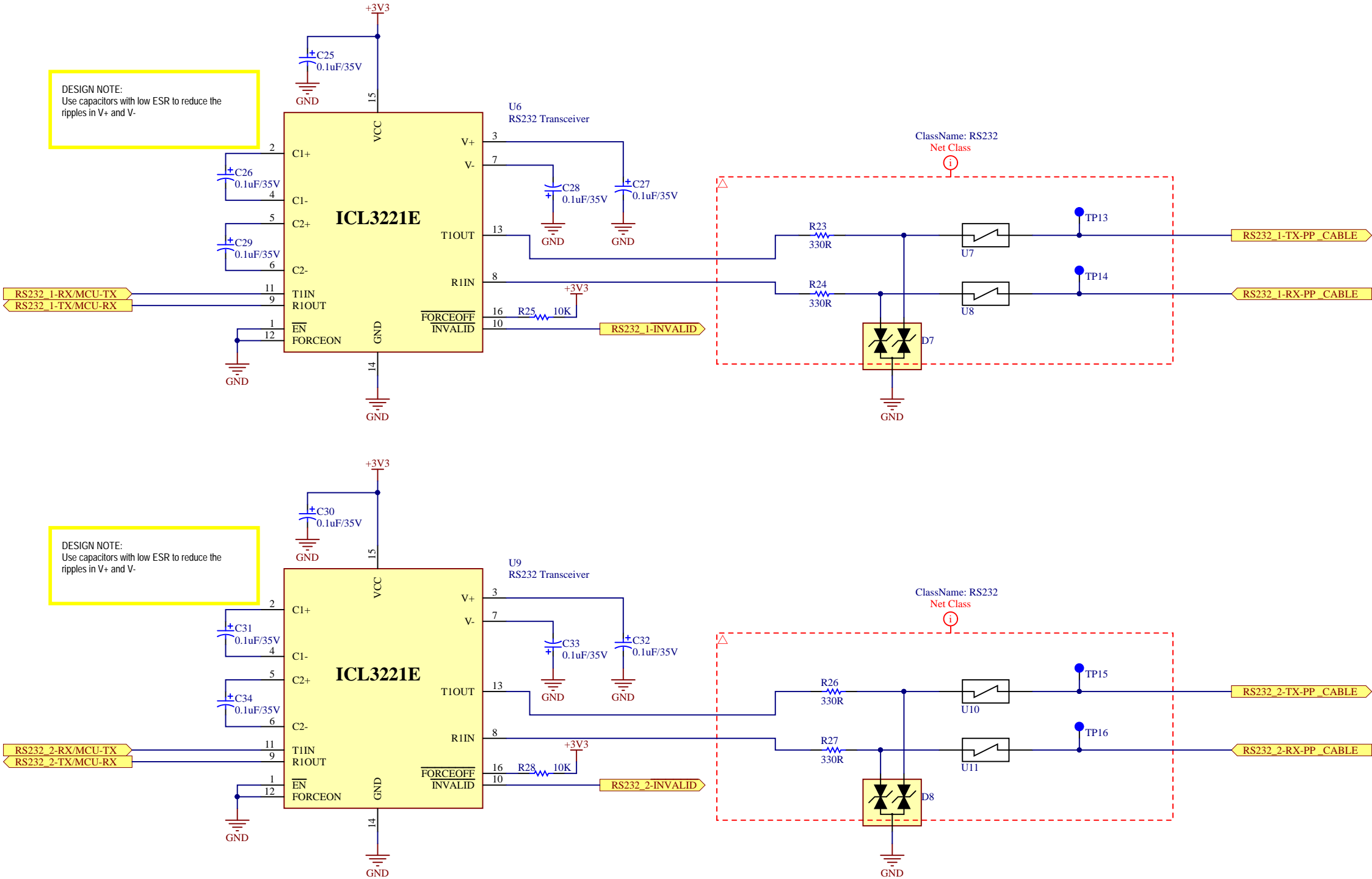


	Trucks Control		<a href="https://truckscontrol.com.br">https://truckscontrol.com.br</a>
	Title:	Safety	Variants: [No Variations]
	Page Contents:	[04] - MCU.SchDoc	Checked by: Alex Batista
	Size:		Version: P1
Date: 1/23/2019	Sheet:	4	of 12

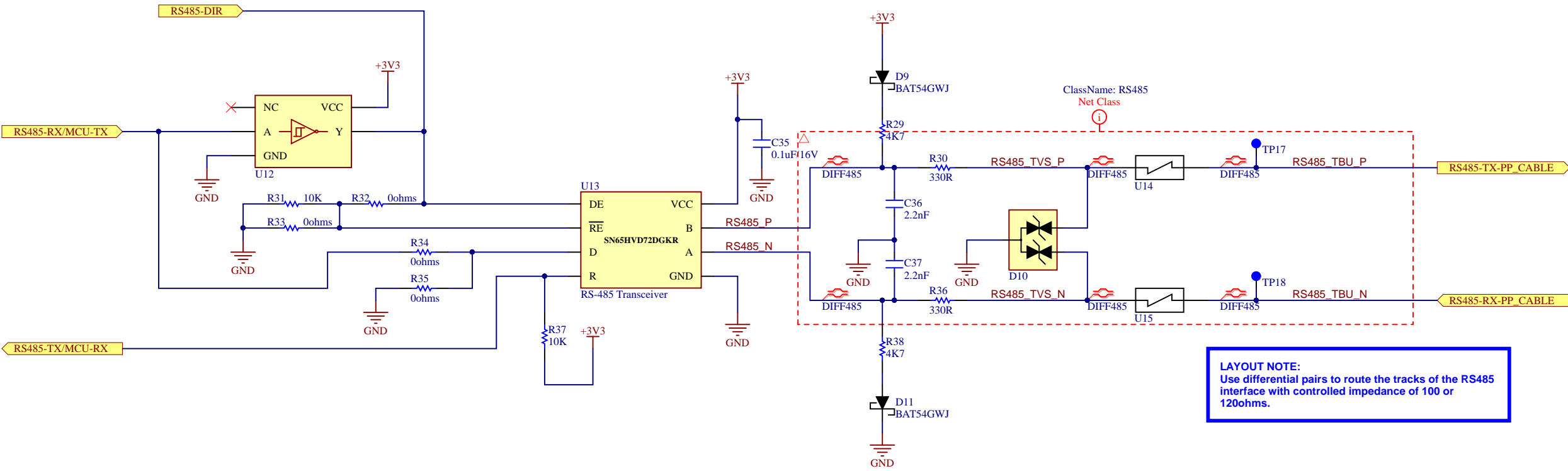


	Trucks Control		<a href="https://truckscontrol.com.br">https://truckscontrol.com.br</a>	
	Title:	Safety	Variants:	[No Variations]
Page Contents: [05] - POWER SUPPLY.SchDoc Checked by: Alex Batista				
Size:		Version: P1		
Date: 1/23/2019		Sheet: 5 of 12		

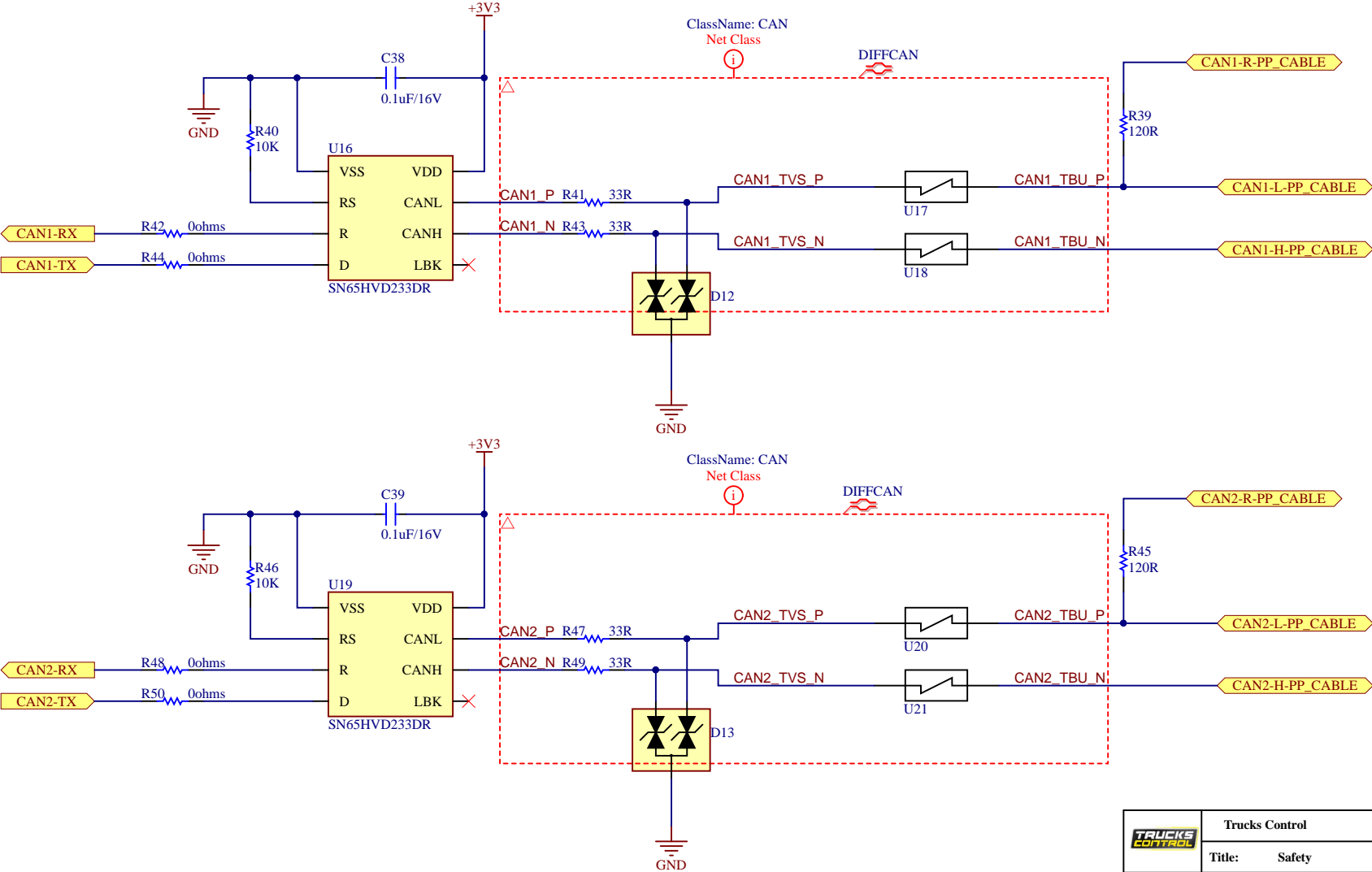
# RS232 INTERFACE



# RS485 INTERFACE



# CAN INTERFACE



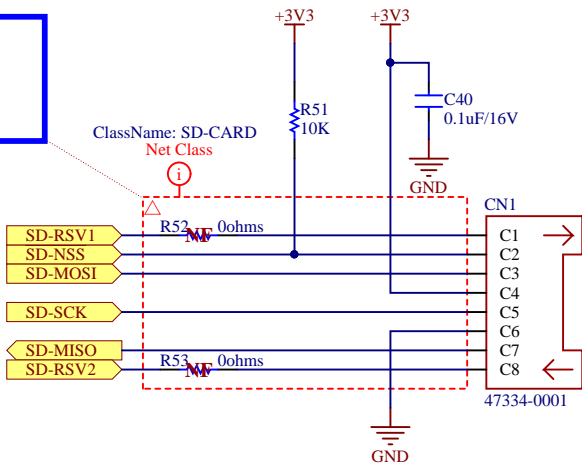
	Trucks Control		<a href="https://truckscontrol.com.br">https://truckscontrol.com.br</a>
	Title:	Safety	Variants: [No Variations]
Page Contents: [08] - CAN INTERFACE.SchDoc Checked by: Alex Batista			
Size:	Version:		P1
Date:	1/23/2019	Sheet:	8 of 12



# SD CARD



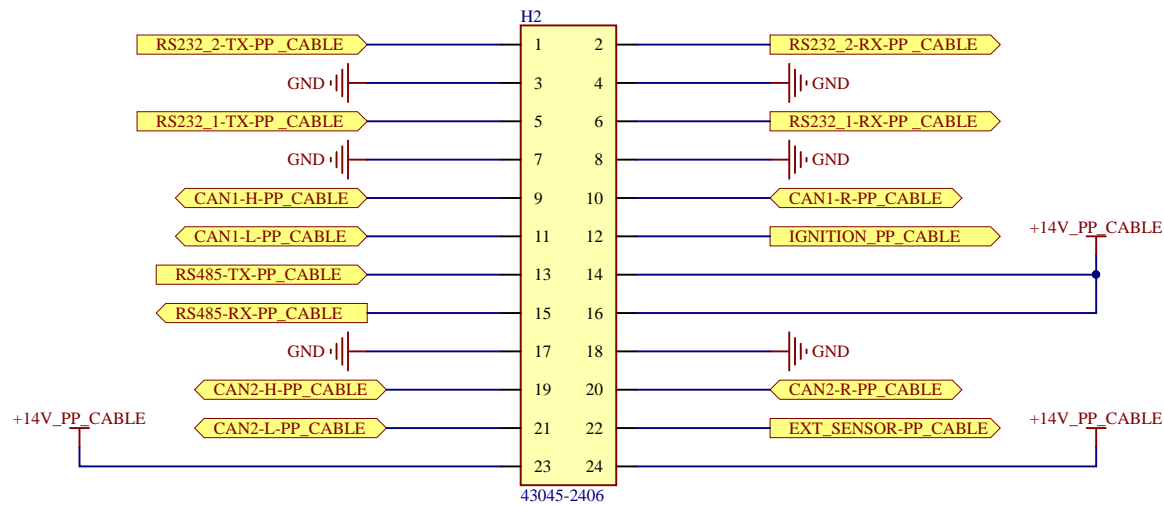
LAYOUT NOTE:  
Keep the tracks of the SD Card  
connection as small as possible



(TOP VIEW)

	Trucks Control <a href="https://truckscontrol.com.br">https://truckscontrol.com.br</a>	
	Title: Safety	Variants: [No Variations]
Page Contents: [09] - SD CARD.SchDoc Checked by: Alex Batista		
Size:		Version: P1
Date: 1/23/2019	Sheet: 9	of 12


# MICROFIT



	Trucks Control <a href="https://truckscontrol.com.br">https://truckscontrol.com.br</a>	
	Title: Safety	Variants: [No Variations]
Page Contents: [10] - MICROFIT.SchDoc Checked by: Alex Batista		
Size:		Version: P1
Date: 1/23/2019	Sheet: 10	of 12



# REVISION HISTORY

	Trucks Control		<a href="https://truckscontrol.com.br">https://truckscontrol.com.br</a>
	Title:	Safety	Variants: [No Variations]
Page Contents: <a href="#">11</a> - REVISION HISTORY.SchDoChecked by: Alex Batista			
Size:		Version:	P1
Date:	1/23/2019	Sheet:	<a href="#">11</a> of <a href="#">12</a>

# SAFETY- SCHEMATIC



Designator  
[01] - COVER PAGE.SchDoc



Designator  
[02] - BLOCK DIAGRAM



Designator  
[03] - IMU.SchDoc



Designator  
[04] - MCU.SchDoc



Designator  
[05] - POWER SUPPLY.SchDoc



Designator  
[06] - RS232 INTERFACE.SchDoc



Designator  
[07] - RS485 INTERFACE.SchDoc



Designator  
[08] - CAN INTERFACE.SchDoc



Designator  
[09] - SD CARD.SchDoc



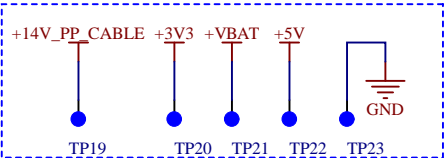
Designator  
[10] - MICROFIT.SchDoc



Designator  
[11] - REVISION HISTORY.SchDoc



## TEST POINTS



## FIDUCIALS



	Trucks Control		<a href="https://truckscontrol.com.br">https://truckscontrol.com.br</a>
	Title:	Safety	Variants: [No Variations]
Page Contents:		tc-pcb-safety_VIII.SchDoc	Checked by: Alex Batista
Size:		Version:	P1
Date: 1/23/2019		Sheet:	12 of 12